"Weber, Steve F."
<sweber@state.nd.u
s>

10/15/01 02:40 PM

To: Kevin Golden/P2/R8/USEPA/US@EPA
cc:
Subject: FW: Calpuff Sensitivity Tests-ND Increment Modeling

Kevin,

I am forwarding the message I sent to Joe Scire, which includes the attachments associated with an illustration of the diffences in predictions from version 5.0 vs 5.4 of Calpuff. I have confirmed with Earth Tech that Scire received the message on Sept. 18. Dick Londergan (Earth Tech) indicated that the model differences are under review.

Steve

-----Original Message-----
From: Weber, Steve F.
Sent: Tuesday, September 18, 2001 4:45 PM
To: 'Joseph Scire'; Irwin.John@epamail.epa.gov
Cc: Weber, Steve F.; "Kevin Golden
<golden.kevin%epamail.epa.gov>"@mercator.src.com
Subject: RE: Calpuff Sensitivity Tests-ND Increment Modeling

Joe,

Attached is an illustration of the prediction differences Kevin and I are finding in Version 5.0 (Level 971107) of Calpuff vs. Version 5.4 (Level 000602_1). The key here is that Dispersion Coefficient Option 2 was utilized.

To limit the size of the archive, the illustration is limited to the two-day period of met data which includes the highest 24-hr prediction (Day 335-336, highest prediction on day 336, Day 335 included for "spin-up") for the entire year 1994 from our processed data. The illustration includes a single species for a single hypothetical stack, and all of our Class I receptors (49). Distance between the stack and closest receptor is about 110 km. Calpuff control file options are consistent for both version runs.

The highest 24-hr prediction for the year using Version 5.4 was 2.85 ug/m3 (Day 336). The paired (same day, time, recep) 24-hr prediction from Version 5.0 was 1.76 ug/m3. The higest 24-hr prediction for the year using Version 5.0 was 1.92 ug/m3. Note there is also a considerable difference in paired 3-hr predictions.

The first attached archive includes the input and output files, along with a readme file containing descriptions. The second contains the exe's and code's for Version 5.0. Version 5.4 exe's are consistent with the current versions on the EarthTech web site. The same set of met data was used for both Calpuff runs. If it is desired to reproduce the entire year of met data, other necessary input files can be provided.

We would appreciate any comments you may have on this.

Steve
sweber@state.nd.us

(701) 328-5188

John,

The quick answer to the question is that Version 5.4 (and now
Version 5.5) should be considered the more correct implementation of
the code, but it is of concern that you are seeing large differences
in results. I would feel better having tracked down the specific
source(s) of the differences.

Steve/Kevin -- can you send a short test case (input files +
code & EXEs) illustrating the problem?

Joe

At 11:55 AM 9/6/01 -0400, you wrote:
>Joe or Dave,
>
>Did one or both of you already reply to this question from Kevin Golden,
>and if so, what was your answer? I would like to think that we are not
>slowing down Kevin in getting some work done, and also, I wonder if the
>answer might have a bearing on our Q&A's.
>
>jsi
>
>_____
>
>Joe and Dave - can either of you help answer Kevin's question?
>
>roger - this may be a "QA" we need to track.
>
>jsi

>
>----- Forwarded by John Irwin/RTP/USEPA/US on 08/16/2001 12:20 PM -----
>
>
>   Kevin
> Golden
>   To: Joe
> Tikvart/RTP/USEPA/US@EPA, John
>   08/15/2001   Irwin/RTP/USEPA/US@EPA
>
>   06:05
> PM   cc:
>   Subject: Calpuff Sensitivity
> Tests-ND
>   Increment
> Modeling
>
>
>
>
>
>In our North Dakota PSD increment modeling I found that there are
>significant differences between Calpuff version 5.0 (1997) and Calpuff
>version 5.4 (2000) for the same input files (this was also verified by John
>Vimont). We need to find out from Earthtech which version of the model is
>correct, so that our modeling analysis can be completed. Steve Weber has
>left a message with Earthtech, but we haven't got any feedback yet. If you
>talk to Joe S soon could you ask him the status on this issue? (Maybe a
>little nudge from you will help ?) Thanks!
>---------------------- Forwarded by Kevin Golden/P2/R8/USEPA/US on
>08/15/2001 03:46 PM -------------------------
>
>
>Kevin Golden on 07/25/2001 01:23:31 PM
>
>To: sweber@state.nd.us
>cc:
>
>Subject: Calpuff Sensitivity Tests-ND Increment Modeling
>
>I was able to replicate your May 24, 1999 Calpuff 5(1997 version) modeling
>results for two different sources (Coal Creek Station and Antelope Valley)
>for 1991 and 1994 meteorology. In fact the results were identical out to 4
>decimal points...so we can safely conclude that our two modeling systems
>are working properly.
>
>I have had a little more trouble reruning the same input files through the

>more recent "guideline" version of Calpuff that you recently recompiled
>with the Lahey '95 fortran compiler (Calpufnd-2000). The newer version
>runs but doesn't give the same answer as Calpuff 5. In fact, as shown in
>the attached table, the results are significantly different with maximum
>concentrations ranging between 4 and 48 percent higher. To see if the
>problem was in Calmet, I reran the "guideline" Calpuff with the 1997
>version of Calmet and got essentially the same results, thus the problem
>seems to be in Calpuff.
>
>I think the differences could be due to either:
>
>1) I screwed up the Calpuff input file somewhere and the inputs are not
>really identical
>
>2) There really are differences between the 1997 version of Calpuff 5 and
>the current guideline version (different default
>values built into the model ?).
>
>3) When the model was recompiled a "glitch" was introduced into the
>software.
>
>I think if we are both going to be using Calpuff, we should be sure that
>any differences are related to modeling inputs and not the model itself. I
>have attached the Calpuff input files I used for the Calpuff5 runs and the
>Calpuffnd-2000 runs. Does anything jump out at you as to why the two
>results are so different?
>
>(See attached file: Avs4org.inp)(See attached file: modtest.wpd)(See
>attached file: av5om.inp)
>
>
>
>
>
>
>

Joe Scire
Atmospheric Studies Group Internet: jss@src.com
EARTH TECH, Inc.   or jscire@alum.mit.edu
196 Baker Avenue   telephone: (978) 371-4270
Concord, MA 01742   fax: (978) 371-2468
USA

CP50VS54.zip VER50EXE.zip